

V. Recommended Preferred Alternative

US 301 Project Development



**Federal Highway
Administration**



**Delaware Department
of Transportation**

V. PREFERRED ALTERNATIVE RECOMMENDATION

Effects to the natural and built environment, resource and regulatory agency input, and the results of the extensive public involvement process were carefully evaluated by DelDOT in order to develop a Preferred Alternative recommendation. Based on all analysis completed and presented in this Draft Environmental Impact Statement, DelDOT recommends the **Green Alternative North Option** as the Preferred Alternative for the US 301 project. This alternative would include **Armstrong Corner Road (ACR) Area Option 2A** and **Summit Interchange (SI) Option 3B**.

Some of the issues considered in developing this recommendation included impacts to communities (property acquisition, potential relocation issues, and community facilities); natural resources (wetlands and other Waters of the US, potential bog turtle habitat, and forests); historic resources (physical, visual, and noise effects); and engineering design (ability to meet project purpose and need, design complexity, construction costs).

This recommendation is for a Preferred Alternative only. Final identification of the Selected Alternative cannot occur until after a Public Hearing is conducted and the Final Environmental Impact Statement has been publicly circulated and the Record of Decision is complete. DelDOT will continue to interact with members of the public and communities, and those directly affected by the Preferred Alternative, along with the environmental resource and regulatory agencies, to refine the Preferred Alternative design and develop strategies to avoid, minimize and mitigate impacts. These refinements will ultimately lead to identifying a Selected Alternative that can be carried forward to design. The following section summarizes the reasoning for this recommendation.

A. Yellow Alternative

As the alternative that stays closest to existing alignments, the Yellow Alternative would have the greatest impact to existing residences and businesses. Seven existing and two proposed communities would be located within 600 feet of the Yellow Alternative, including Bunker Hill, Middletown Village, Springmill, The Legends West, Grandview Farms, Summit Bridge Farms, and Lea Eara Farms. In addition, one proposed “Livable Delaware” community, Bayberry, would be divided by the Yellow Alternative.

Local access roadways, usually in the form of existing roadways (US 301 and Boyds Corner Road), would be retained along the Yellow Alternative in order to maintain access to residences or businesses not displaced by the alternative. The result would be a wide (400-foot and greater) highway corridor that would impede community cohesion within the project area.

Elevated sections along the west side of Middletown (where new US 301 would overpass SR 299, Bunker Hill Road, Main Street, SR 71 and Frogtown Crossing) and along SR 896 (where new US 301 would overpass Boyds Corner Road twice, Jamison Corner Road, Emerson Road, Shallcross Lake Road, and US 13), as well as new service roads that would be required between

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SR 15 and Churchtown Road, make the Yellow Alternative the most expensive and most disruptive to adjacent communities. The Yellow Alternative would have more noise impacts to adjacent residences (74) compared to the Brown (14 and 27) and Green Alternatives (32). It would not be cost effective to provide noise walls to these communities because of the elevated nature of much of the Yellow Alternative and because of the numerous driveways and access points along Boyds Corner Road.

Along the portion of the alignment that is parallel to existing SR 896 (Boyds Corner Road), the Yellow Alternative would impact several community facilities, including Cedar Lane Elementary and Middle Schools, the Odessa Volunteer Fire Company Substation, and New Covenant Church.

A total of 150 residences and businesses would require relocation and 98 would require a partial take under the Yellow Alternative. The level of community impact was consistently raised at public workshops and community meetings throughout the study. In addition, property acquisitions would result in the highest real estate and total costs among any of the alternatives.

There are four known significant historic properties that would be physically affected by the Yellow Alternative. Under Section 4(f) of the US Department of Transportation Act of 1966 (49 U.S.C. Section 303), the Federal Highway Administration (FHWA) cannot approve the use of land from a significant historic site (as well as significant publicly owned public parks and recreational facilities) unless there is no feasible and prudent alternative to the use of the land. The other alternatives (Purple, Brown and Green) avoid physical impacts to known significant historic properties and parks, and are thus avoidance alternatives for the Yellow Alternative. The use of historic properties would likely prevent the Yellow Alternative from being approved for selection by FHWA.

Even though it would have the lowest impact to streams, farmland, forest, and habitat, the Yellow Alternative would impact the largest area of wetlands among any of the alternatives. The access road configuration with the Yellow Alternative would require a complex design that would increase maintenance of traffic (MOT) impacts along existing US 301 and Boyds Corner Road during construction. The Yellow Alternative interchange at SR 1 would require long, undesirable directional ramps to bypass the existing Biddles Corner Toll Plaza. The Yellow Alternative would be the most disruptive to the public during construction. Finally, because of its location parallel to existing US 301 and SR 896, the Yellow Alternative carries less traffic compared to the other alternatives, and reduces traffic less on most north-south roads when compared to the other alternatives.

B. Purple Alternative

The Purple Alternative does not physically impact any known significant historic resources. The Purple Alternative would have a visual or noise effect on 17 historic properties, which would be more than the Brown Alternatives (11), and slightly more than the Green Alternatives (13 and 15).

In general, the Purple Alternative has similar natural environmental impacts to the Green Alternatives, with slightly less wetlands impacts, less subaqueous lands impacts, and slightly greater waters of the US impacts.

Along the portion of the alignment that is parallel to existing SR 896 (Boyd's Corner Road), the Purple Alternative would impact several community facilities, including Cedar Lane Elementary and Middle Schools, the Odessa Volunteer Fire Company Substation, and New Covenant Church. The alignment would have significant effects to existing and proposed communities along SR 896, including Grandview Farms (existing) and Bayberry (proposed). Similar to the Yellow Alternative, the Purple Alternative would require a wide (350-foot) roadway corridor along existing Boyd's Corner Road.

The Purple Alternative has among the highest noise impacts to residences (77) as compared to the Green Alternatives (32). Noise and visual impacts to communities along the east-west section of the Purple Alternative could not be economically mitigated because of the elevation of the roadway needed to cross over Boyd's Corner Road twice, Jamison Corner Road, Emerson Road, Shallcross Lake Road, US 13, and SR 1, and because of the numerous driveways and access points along SR 896 (Boyd's Corner Road).

The Purple Alternative would require the same long, undesirable directional ramps to bypass the existing SR 1 Biddle's Corner Toll Plaza as the Yellow Alternative. Also, because of right-of-way costs and complex interchange and access road configurations, the Purple Alternative has a much greater cost (\$616 to \$680 million) than the Green Alternatives (\$526 to \$590 million).

C. Brown Alternative North and South Options

Both Brown Alternatives would have a major impact on Summit Airport. The Brown South Alternative would impact the existing airport runway and support buildings, as well as expansion plans for the airport. The Brown North Alternative would be located within the clear zone for the northern end of the existing runway and also affect expansion plans approved by the FAA for the Summit Airport. These impacts to previous Federal Aviation Administration (FAA) approvals would inhibit FHWA approval of the Brown Alternatives. Key correspondence from FAA is included in **Appendix E**. Although the estimated cost of the Brown Alternatives is within the same range as the Green Alternatives, the costs for potential mitigation of airport operations/expansion impacts have not been estimated or included.

The Brown Alternatives would have no physical impact on known significant historic resources. The Brown Alternatives would affect one additional potentially eligible property, the J. Biggs House located at 939 Bethel Church Road (N06320). The initial survey indicated that this house may include an early structure that was covered by later additions. The National Register eligibility of this resource has not yet been evaluated, as the full investigation would require removal of parts of the building. The Brown Alternatives would have the fewest noise and visual impacts on historic properties (11).

The Brown Alternatives would have the greatest impact to the communities at the base of Summit Bridge, with new US 301 located within 600 feet of three existing communities, Chesapeake Meadows, Summit Bridge Farms, and Lea Eara Farms, and the planned Rothwell Village community. Minimizing impacts to the existing communities adjacent to the US 301/SR 896/SR 15 interchange would not be cost effective due to the three-level configuration and the elevation of the roadways.

Impacts to the natural environment would be somewhat similar to the Green and Purple Alternatives, although the Brown Alternatives would have the greatest impacts to high quality wetlands, streams and habitat areas.

Because the Brown Alternatives are on new location, maintenance of traffic during construction is simplified and the need for service road construction is eliminated. The Brown Alternatives would require less complex access road configurations than the Yellow and Purple Alternatives. However, the interchange required at US 301/SR 896/SR 15 south of the C&D Canal would be more complex than those required for the Yellow, Purple, or Green Alternatives. Due to community impacts, the Brown Alternatives received considerable opposition at the public workshops and community meetings.

D. Green Alternative North and South Options

The Green Alternatives would have no physical taking from any known significant historic resources. Therefore, the Green Alternatives are feasible and prudent avoidance alternatives to the Yellow Alternative, and it is anticipated that a formal Section 4(f) Evaluation would not be required. An assessment of Section 4(f) issues has been included in **Appendix H**.

Effects on the natural environment (wetlands, streams and habitat areas) from the Green Alternatives would be generally comparable to those for the Purple and Brown Alternatives. The Green Alternatives would have the lowest impact on forested areas.

The Green Alternatives travel along primarily new alignment and have the lowest impact on existing communities in the project area. Key community facilities, such as Summit Airport, the Cedar Lane Schools, and Odessa Fire Substation would not be affected by the Green Alternatives. The planned Livable Delaware community of Bayberry would be least affected by the Green Alternatives.

The Green Alternatives would be within close proximity to the fewest number of communities. The Green North and South Alternatives would have fewer noise impacts on project area residences (32) when compared to the Purple (77) and Yellow (74) Alternatives. The Green Alternatives provide the greatest potential for minimizing visual and noise impacts because of the roadway elevation that typically passes under local roadways and at a greater distance from communities than other alternatives. For these reasons, the Green Alternatives have been more highly favored by the public throughout the project development process.

The Green Alternatives best meet the purpose and need for the project. The Green Alternative is forecast to carry a somewhat greater volume of traffic (56,700 vehicles daily north of Middletown and 42,200 vehicles daily west of Cedar Lane) than the other alternatives, thus resulting in a lower volume of daily traffic on local roadways (18,100 vpd for Boyds Corner Road; 21,300 vpd for existing US 301 (north of Middletown); 4,500 vpd for Cedar Lane Road; 5,100 vpd for Choptank Road; and 13,600 vpd for SR 299). The Spur Road provides a parallel route to the Summit Bridge, thus reducing traffic on Choptank Road and existing US 301. The Green Alternatives provide efficient local access to existing and planned traffic generators in the project area, including Westtown, Middletown, Bayberry and Whitehall. The Green Alternatives also provide the most direct alignment (17.5/17.3 miles long, with the Spur Road) and preserve the existing US 301 and SR 896 (Boyds Corner Road) corridors. The Green Alternatives would provide adequate separation of through and local traffic and enhance safety on the local roadways. Furthermore, the Green Alternatives would not substantially disrupt travel patterns during construction.

1. Green North Alternative: Armstrong Corner Road (ACR) Area Options

Please refer to the descriptions in Chapter II for details regarding the ACR Area Options.

a. *ACR Area Option 1*

Option 1 would provide an interchange between new US 301 and existing Armstrong Corner Road. Option 1 is located farthest from the Springmill community, thus reducing the potential for noise and air quality impacts. Option 1 has the lowest wetland and subaqueous lands impacts and the highest forest land and habitat area impacts. Option 1 would require acquisition and relocation of the Middletown Baptist Church (impacts both church buildings and parking lot). Option 1 would locate the interchange on a local road (Armstrong Corner) rather than on an arterial road (existing US 301) and provides ramp spacing between the Spur Road and Armstrong Corner Road interchanges that barely meets minimum design standards.

*ACR Area Option 1 is **not preferred** because it locates the interchange on a local road rather than an arterial road and requires the relocation of Middletown Baptist Church, and because other options better meet design standards.*

b. *ACR Area Option 2*

Option 2 would locate the new interchange on an arterial road (realigned US 301) rather than a local road (Armstrong Corner Road). Option 2 has the greatest high quality wetland impacts and high waters of the US impacts. Option 2 would result in significantly greater right-of-way and relocation impacts to the properties along existing US 301. The construction costs would be greater due to property acquisition, relocation costs, and additional structure and roadway costs. Option 2 would provide two additional closely spaced traffic signals on existing US 301. Option 2 does not impact the Middletown Baptist Church buildings, but does require acquisition of a

portion of the church parking area. Option 2 would be closer to the Springmill community (800 feet) than Option 1 (1,300 feet).

*ACR Area Option 2 is **not preferred** because it has significantly greater right-of-way and relocation impacts; increased right-of-way, structure and roadway costs; and could affect traffic operations on existing US 301 with two closely spaced additional traffic signals. In addition, Option 2A provides the same advantages as Option 2, but avoids the major disadvantages of Option 2, i.e., the relocation of existing US 301 in order to accommodate the north serving ramps.*

c. ACR Area Option 2A

Option 2A would locate the interchange access on an arterial road (existing US 301) rather than on a local road (Armstrong Corner Road). Option 2A would have low high quality wetlands and forest land impacts and high waters of the US impacts. Traffic operations would be affected by the two additional signals required on existing US 301 for the access ramps, but the signal spacing would be greater than with Option 2. Option 2A would require a wider bridge crossing over existing US 301 to accommodate the deceleration lane for the loop ramp and turn lanes may have to be added on existing US 301 to accommodate queues accessing the ramps. However, Option 2A would not require the relocation of existing US 301. Option 2A would be closer to the Springmill community (700 feet) than Options 1 (1,300 feet) and 2 (800 feet). Option 2A would not require relocation of the Middletown Baptist Church. This interchange option would avoid direct impacts to the Middletown Baptist Church property.

*ACR Area Option 2A is **preferred**, because it locates the interchange on an arterial road rather than a local road, has significantly less right of way and relocation impacts than Option 2, and does not require the relocation of Middletown Baptist Church.*

d. ACR Area Option 3

Option 3 would provide access using a local road (Armstrong Corner Road) rather than directly accessing an arterial (existing US 301), and would avoid direct impacts to the Middletown Baptist Church property; however, the interchange is closer to the Springmill community (600 feet) than any of the other options. Option 3 would impact the greatest amount of wetlands and have lower waters of the US and subaqueous lands impacts. Although none of the options has a direct impact on any known historic property, Option 3 is closer to the Armstrong-Walker House than other options, causing greater indirect audible and visual impacts.

*ACR Area Option 3 is **not preferred** because it locates the interchange on a local road rather than an arterial road, has the greatest wetland impacts, and is closer to the Armstrong-Walker House and the Springmill community than the other options.*

2. Green North Alternative: Summit Interchange (SI) Options

Please refer to the descriptions in Chapter II for details regarding the SI Area Options.

a. *SI Area Option 1*

SI Area Option 1 would eliminate the curve in SR 896 south of Summit Bridge and provide a diamond interchange between SR 896, SR 15, and the Spur Road with full vehicular access in all directions for local communities. Option 1 eliminates the existing sharp curve/traffic signal on SR 896, south of Summit Bridge. The northbound exit ramp would act as a buffer between the Spur Road and the community of Summit Bridge Farms. However, this option would not optimize the flow of the heaviest northbound and southbound traffic movements: southbound through traffic on SR 896 from the Summit Bridge would be required to pass through a signalized intersection, and northbound through traffic on SR 896 to the Summit Bridge would become a right turn movement.

SI Area Option 1 has slightly lower wetlands impacts than Options 2, 3, 4B, and 4 and similar waters of the US impacts to Options 2, 3, and 3B, but greater than Option 4. Subaqueous land impacts are similar to Options 2, 3, and 3B, but again, greater than Option 4. Habitat area impacts are about the same for all options as are forest land impacts.

*SI Area Option 1 is **not preferred** because the heaviest local traffic movements (southbound and northbound SR 896) must pass through signalized intersections, with the southbound movement requiring double left turning movements through a traffic signal during the PM peak period. Other options provide better traffic operations.*

b. *SI Area Options 2 and 2A*

Option 2 would improve the existing sharp curve on SR 896 south of Summit Bridge to current design standards, remove the traffic signal on the existing curve, and maintain free traffic flow for the heaviest movements (SR 896 northbound and southbound through the interchange). Option 2 would also move the flow of traffic further from Summit Bridge Farms, minimizing the visual and audible impacts of the roadway on that community; however, the Spur Road would be elevated to pass over SR 896, and SR 15 would pass over both the Spur Road and SR 896 past Summit Bridge Farms, increasing the visual and noise impacts on the community. Option 2 would create circuitous access for SR 15 traffic west of SR 896 to access SR 896 and result in a high volume of traffic on Bethel Church Road and Old Summit Bridge Road adjacent to the Lea Eara Farms community. Option 2A would extend Old Summit Bridge Road to the entrance to Summit Bridge Farms and place a traffic signal on SR 896 close to the curve south of Summit Bridge.

*SI Area Options 2 and 2A are **not preferred** due to the circuitous access for SR 15, the placement of the traffic signal on SR 896, the potential impacts to Lea Eara Farms community, and the increased number of structures/increased construction cost.*

c. SI Area Options 3 and 3A

SI Area Option 3 would offer the same advantages and disadvantages as Option 2; however, Option 3 would provide for a less circuitous route from SR 15 (Choptank Road) to SR 896 via an intersection of the Spur Road with Bethel Church Road Extended. Bethel Church Road would be extended from Choptank Road to the Spur Road, rather than carry through to the intersection, and existing Bethel Church Road, north of the extension, would end in a cul-de-sac. Option 3 would introduce a signal on the Spur Road, the only signal on new US 301 and the Spur Road south of the Canal. Option 3 would also decrease the visible and audible impacts to Summit Bridge Farms as compared to Option 2. Option 3A would extend Old Summit Bridge Road to the entrance to Summit Bridge Farms and place a traffic signal close to the SR 896 curve.

*SI Area Options 3 and 3A are **not preferred** due to the introduction of a signal on the Spur Road at Bethel Church Road extended and the placement of the traffic signal on SR 896 close to the curve south of Summit Bridge.*

d. SI Area Options 3B and 3BA

SI Area Option 3B would offer similar advantages and disadvantages as Option 3; however Option 3B would improve traffic operations and safety on the Spur Road over Option 3 by eliminating the signalized intersection at the Spur Road and Bethel Church Road extended and providing interchange ramps to and from the north at this location. Option 3BA would extend Old Summit Bridge Road to the entrance to Summit Bridge Farms and place a traffic signal close to the SR 896 curve.

*SI Area Option 3B is **preferred** because the interchange at Bethel Church Road extended and the Spur Road improves traffic operations and safety on the Spur Road and removes the only potential signal on new US 301 and the Spur Road south of the Canal. Option 3BA is **not preferred** because of the placement of a traffic signal on SR 896 close to the curve south of Summit Bridge.*

e. SI Area Options 4 and 4A

SI Area Option 4 would offer similar advantages and disadvantages as Option 3. However, it would keep speeds lower on the Spur Road by the provision of additional local access with three signalized intersections at Bethel Church Road extended, Old Schoolhouse Road, and Churchtown Road. New Castle County and, in general, the public opposed Options 4 and 4A due to its potential to encourage growth in areas to the west of the Spur Road not currently proposed for development. Because Options 4 and 4A provide additional local access to areas to the west and south of Middletown, thus increasing projected traffic on Choptank Road. Option 4A would extend Old Summit Bridge Road to the entrance to Summit Bridge Farms and place a traffic signal on SR 896 at this location, close to the curve south of Summit Bridge.

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Option 4 has less waters of the US impacts and subaqueous land impacts than the other options, primarily because Option 4 replaces the Churchtown Road and Old Schoolhouse Road overpasses of new US 301 included in other options with at-grade intersections. The communities along Churchtown Road and Old Schoolhouse Road objected to Option 4 due to the additional traffic on these roads desiring to access the Spur Road.

*SI Area Options 4 and 4A are **not preferred** due to the introduction of additional access on the Spur Road, which would increase traffic on Choptank Road south of Old Schoolhouse Road, on Old Schoolhouse Road, and on Churchtown Road as a result of providing local access, and due to the placement of the traffic signal on SR 896 closer to the curve south of Summit Bridge. Option 4 was opposed by the public and New Castle County due to the potential to encourage growth in areas west of the Spur Road not currently proposed for development.*